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Exploring the Effects of Text Messaging on the Spelling Skills of Ninth and 12th Grade Students

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Abstract

Text messaging has been criticized for a perceived negative impact on spelling skills of students and its increasing appearance in formal school papers. This paper presents a study of the effects of text messaging on the spelling skills of ninth and 12th grade students at a U.S. high school in a Chicago suburb. The 20 students – six in the ninth grade group and 14 in the 12th grade group – were given a questionnaire concerning their texting practices and a grade-appropriate spelling test. They also were asked if it is appropriate to use textisms in formal writings and to write a formal email to their principal. The use of texting showed no significance on spelling, either for high/low text groups or long/short history groups. I did find a spelling significance between ninth graders and 12th graders. All students responded that textisms are not appropriate for formal papers, though one student used two textisms in his formal note. This study should inform future research into the effect of text messaging on the spelling skills of U.S. youth given the scarcity of research on the subject.

Exploring the Effects of Text Messaging on the Spelling Skills of Ninth and 12th Grade Students

The introduction of computer mediated communication (CMC) and the evolution of instant messaging (IM) and short message service (SMS) technology – commonly associated with cell phone text messaging -- have provided a range of conveniences to society. Many people today find it hard to live without their mobile phones or cannot stay away from their computers and are constantly viewing their emails. But with these modern-day advances have come concerns about the impact of these transformative new technologies on the standards of communication that have been practiced for so long. New laws have even been introduced to limit the negative impact of some of the uses for these new technologies, such as laws against talking on a cell phone while driving without the use of a hands-free device and the outright ban on sending a text message while driving.

Sending messages via text has been practiced for many years. Instant messaging, a real-time exchange of text messages between two or more people via computers connected to the Internet, was introduced in 1996 by a company called Mirabilis (Boneva, Quinn, Kraut, Kiesler & Shklovski, 2006). Instant messaging became more popular after the company was purchased by America Online in 1997 and used the technology in what became the popular America Online Instant Messaging service (AIM). Today, however, sending messages via mobile phone technology has surpassed messaging via the Internet **(**Gann, Bartoszuk, & Anderson, 2010)

SMS is the younger cousin of CMC-generated instant messaging and primarily is sent via cell phones. It was developed as a way for European telecommunication companies to produce one interoperable message technology that could be utilized across the continent (Longoria & Stark-Smith, n.d.). The companies had no grand schemes for the technology, but decided that through their Group Special Mobile (GMS), now known as the Global System for Mobile Communications, they would create a way to send short alerts to cell phone subscribers.

Because SMS messages must, by technological limitations, be frugal in word use, they also involve expanded use of word manipulations carried over from CMC-generated text messaging such as IMs and chat language. To conserve space, SMS text, also called textisms, textese and text-speak, utilizes more abbreviations and otherwise shortening of words, dropping of letters, combining letters with symbols or numbers to make an appropriate sound, and acronyms (Grinter & Eldridge, 2003; Rosen, Chang, Erwin, Carrier & Cheever, 2010).

The use of cell phones in America grows every year and people are starting to use them at younger ages. In the United States, young people typically have used cell phones more for voice oriented communications while youths in Europe used the technology more for SMS messaging because of the cheaper cost structures (Faulkner & Culwin, 2005; Reardon, 2008; Sutherland, 2002). Students in Israel have perfected the “art” of shorthand-texting because they are charged by the number of calls made and characters used **(**Berman, 2006), obviously a motivator for brevity.

American youth were slower to adopt text messaging, perhaps because low cost was not an incentive and they were content with using landline phones (Sutherland, 2002). They also were more familiar with and had a preference for the full computer keyboard as a result of typing taught in U.S. schools. Thus, the debate about the impact on spelling and the incursion of SMS culture into the formal learning environment has been taking place in Europe and other countries for a longer period of time than in the United States.

Critics will point out that elements of text messaging – intentional misspellings, g-clippings (dropping the "g" at the end of words), abbreviations, emoticons such as smiley faces, etc. -- are showing up even in formal writings. For example, one first year college student at the Interdisciplinary Center in Herzliya, Israel, actually wrote in a hypothetical formal paper: "xs cmpnstn fnds wl b nvstd 4 srvvng fmly mmbrs" (Berman, 2006). Translated, the message means "Excess compensation funds will be invested for surviving family members." The student explained she knew the spelling wasn't traditional English, but thought it was appropriate because she knew it was to be sent via email. In another instance, a 15-year-old wrote in a job application, "I want 2 b a counselor because I love 2 work with kids," prompting his father to disconnect an instant messaging program from the family's computer (Dorfmeister, 2007, p. 30).

Those concerns now are beginning to emerge in the United States due to the rapid growth of text messaging among youths. Social scientists, scholars and educators are drawing the line on this topic and are standing in their respective corners ready to defend their positions as they consider such questions as: Will a

12-year-old texter who drops vowels and word endings consistently in his text messages develop permanent spelling deficiencies? Do adolescents find it appropriate to use textese in formal writings? Should we care if a student writes “bcuz” instead of “because” or “@” instead of “at” in a sentence in a formal paper?

In my search for literature on the impact of text messaging on the spelling skills of youths, I found studies on the topic involving children in Europe. There were few studies on the topic of texting and spelling involving Americans, and those that researched the issue focused on young adults. My study will focus on the impact of text messaging on the spelling skills of ninth and 12th grade students, ages 14 through 18, and add to the body of knowledge about the impact of text messaging on the spelling skills of adolescents in the United States.

Literature Review

The use of IM and now SMS and their impact on literacy and the English language is a hotly debated topic where scholars and educators are beginning to take sides. In one corner are those who argue that misspellings, short-spelling of words and the extensive use of abbreviations typically used in IM but mostly in SMS messages are showing up in formal school papers (Coulter, 2008; Douglas, 2008; Ross, 2007). These scholars argue that texting is negatively impacting the literacy skills of school children and something must be done to maintain proper spelling and language use in formal presentations. One educator tossed out papers too littered with texting abbreviations and symbols to understand, calling it a

"wake up call" to students to "concentrate" on proper writing presentations (Coulter, 2008). Another teacher was moved to write:

> I also find that students' overall quality of work has suffered because their attitude toward writing has changed. Much like texting, students want to get everything written as fast as possible. They don't want to be bothered with the writing process – drafting, revising and editing (Ross, 2007, p. 4).

On the other side of the debate are scholars who feel that language is a living creature and prone to evolve with new technologies and the changing needs for communications **(**Craig, 2003; Jacobs, 2008; Witte, 2007). These scholars argue that text messaging should not be fought, but can be used to engage young people in a way that enhances the expression of thought in their writings and even improve spelling skills.

Craig **(**2003) argues that young people who use instant messaging – and therefore enter into a practice of using slang and phonetic replacements -- subconsciously increase their knowledge of metalinguistics -- the skill of understanding language and culture – thus experiencing "tangible increases in overall literacy" (p. 125). Witte (2007) demonstrates that a student who was reluctant to write class papers was writing profusely online. She successfully used the student's interest in online use of text to get the student interested in class writing assignments. Can the same strategy be applied to help students interested in texting to become more familiar with the rules of language and spelling?

Research supported by the European Commission's Information Society Technologies initiative that observed learning programs using hand held digital

devices showed positive results on literacy (Atwell, 2005). Participants demonstrated enthusiasm for the programs and 82% felt use of the technology would help improve their reading or spelling skills. The non-traditional approach to learning also boosted confidence and self-esteem, which perhaps contributes to enhanced learning abilities. Studies also have shown that students in self-assessments declare their awareness that texting and formal writing are different and that textisms are not appropriate for school papers (Crystal, 2008; Hashemi & Segerstad, 2008; Jacobs, 2008). Nevertheless, consciousness tends to lapse during some assignments and text language has been creeping in.

Slang and abbreviations of terms used in writings (e.g. FYI, meaning “for your information”) have been with every generation. In a sense, slang and the creation of new terms and symbols are a generation’s cultural mark on the march of time. Sometimes these words have become so popular that they found themselves being invited into official language use and found a place in world-renown dictionaries.

For example, the text terms “OMG!”, for “Oh, my God”, and “LOL”, for “Laughing out loud”, have officially found their way into the Oxford English Dictionary’s online edition (Lawless, 2011). Interestingly, to critics of text language creeping into the English language, “OMG” first was used in a 1917 letter from a British military official. Furthermore, terms such as fun, mob, jazz and stingy once were considered jargon (Craig, 2003).

So it is with texting. Some elements of it will find their place in accepted written communications standards while other elements of it will be jettisoned.

What really matters in this debate is how parents and teachers guide that interest in texting with young people and utilize it as a teaching moment about English language and spelling protocols.

Defining Terms

Instant messaging emerged as a popular tool of communication among young people and SMS followed as the use of mobile technology developed. Since both are text-based communications sent via digital technology, they naturally have similarities but also very important differences. Instant messaging is the synchronous CMC-generated exchange of text-based messages, meaning the messaging takes place in real-time between two or more people logged into a particular instant messaging service at the same time where messages are sent immediately and pressing the enter key often sends the text **(**PCmag.com, 2009a; Thurlow & Brown, 2003). Text messaging, or "texting," occurs when an asynchronous SMS-generated message is sent from a cell phone or other handheld mobile device. The receiver of the message is not on the line with the sender at the time the message is transmitted and the recipient initiates a separate call to respond to the message **(**PCmag.com, 2009b; Thurlow & Brown, 2003).

The key differences are that IMs are done on a computer and offer more space for the message and a full keyboard to type it. A text message, on the other hand, is sent via cell phone and generally limits a sender to 160 characters, including spaces **(**Grinter & Eldridge, 2003; Kul, 2007; Ling & Baron, 2007). Typing of text messages also mostly is done with the user's two thumbs due to the small keyboards of cell phones and other handheld mobile devices (Faulkner &

Culwin, 2005; Ling & Baron, 2007). Also, more than one strike of a key may be needed to produce the desired character. For example, it takes three strikes of the "2" key on a cell phone to produce the letter "c" and four strikes to produce the number "2". While CMC and SMS messages include many of the same abbreviated and otherwise shortened words and symbols, SMS, by necessity of the limitations of the technology, incorporates more of these shortened words. The fact that SMS messages primarily are typed using the thumbs also dictates a need for brevity.

Texting Use in the United States

It has been more than a decade since Riku Pihkonen sent the first text message in 1993 (Goggin, 2004). And that occurred more than a decade after the first cell phone service in the United States went online in Chicago in 1978. Back then, technicians and inventors were more concerned with making cell phone technology reflect landline phone usage. In fact, corporate executives were astonished when they saw the popularity of texting on cell phones rise as an unintended byproduct fueled by young people using the technology (Goggin, 2004; Lacohee, Wakeford & Pearson, 2003). Cell phone ownership for text messaging obviously opened new markets for mobile phone companies and new concerns for educators and researchers.

Young people -- who already were demonstrating a high level of hand, eye coordination with the popularity of video games played with remote controls that required quick and constant hand and finger movement – transferred those skills to the small keyboards of the cell phone as they experimented with the new text

messaging technology. Use of text messaging first exploded among teens in Europe because initially with GMS there was no additional cost for a text and young people saw it as a cheaper way to communicate rather than the higher cost of making a phone call (Goggin, 2004; Longoria & Stark-Smith, 2010). Phone companies soon noticed the trend, however, and implemented new pricing structures that allowed them to capitalize on text use. Still, texting remained cheaper than making a phone call.

Today, 75% of teens in the United States ages 12 to 17 own a cell phone, a rise of 30% since 2004 (Pew Research Center, 2010). Seventy-two percent of all teens in that age group use text messaging, up from 51% in 2006. Pew research shows that the frequency of text messaging has surpassed the frequency of all other forms of communication with friends among all teens, including instant messaging, cell phone calls, face-to-face conversations, and email.

Among the reasons young people gravitated to text messaging is it was a way of creating their own space, a place where adults could be excluded, and it was convenient (Grinter & Eldridge, 2001; Smith, 2010; Thurlow & Brown, 2003). They also liked texting because they didn’t have to be tied down to a computer in a single location, and they found texting to be a useful means of coordinating times and means for future communications, such as arranging a time in the future to talk on the phone or chat via Internet instant messaging and coordinating other activities. They also use texting to chat and gossip and to coordinate plans with family members. And they found texting to be quicker than other means of communications, thereby avoiding long phone conversations.

While the rate of text messaging increases as teens age from 13 years of age to 18, attention also has been drawn to rate that texting is increasing among preteens. Thirty-five percent of 12-year-olds say they text daily (Lenhart, Ling, Campbell, & Purcell, 2010). This compares with 38% of all teens who sent a text message daily in 2008 (Lenhart, 2009). Astonishingly, a survey of 40,000 cell phone bills revealed that children under 12 sent an average of 1,146 text messages a month, or four messages for every hour that they were not asleep or in school (Entner, 2010).

Texting Raises Old Debate

Educators and researchers are correct to be concerned about the effects of text messaging on the spelling skills of young people, particularly since the age of texters is getting lower. But these concerns about changes in the English language and spelling of common words are not new. Text messaging practices by young people is just fueling the reemergence of this debate. Even Benjamin Franklin proposed a simplified spelling system and Noah Webster, author of the Original Blue-Backed Speller for children, advocated simplifying words like “labor” from “labour” (Hedrick, 2008). “Free spelling” was a common occurrence during the time of the great playwright William Shakespeare -- who spelled his own name more than six different ways -- and continued until the 18th century with the standardization of formal spelling (Baron, 2009; Huang, 2008; Yanzon, 2005). Technology (the rise of the printing press) and the introduction of the dictionary helped to standardize written English. Similarly, technology (the

emergence of portable digital devices) has created a need, if not desire, for a free spelling style among portable digital device users.

Since young people are increasing the time they spend communicating through text messaging, they obviously are engaging in more texting practices, such as using abbreviations, intentional shortening of words and misspellings, eliminating punctuation and omitting blank spaces, among other violations of common spelling. As teens and preteens begin this practice at younger ages, how does the practice impact the development of their spelling skills?

How Children Learn To Spell

Throughout this paper I will argue that engaging in text messaging can have a positive effect on the development of spelling skills in young people if it is used as a teaching tool. To understand why I make this argument, we must first examine how children learn to spell.

Children are naturally inquisitive, being that everything they encounter is a new experience, and their minds are like sponges, soaking up the experience of every new encounter. Since children learn so quickly from experiences, it could be argued that engaging in the repetitive, and arguably negative, practices of texting, that a child will incorporate bad spelling as a habit.

On the other hand, I contend that introducing text messaging on mobile devices to a young person would be viewed as something new, fun and enjoyable and the child would aggressively engage in word formation and explore other aspects of literacy development. Furthermore, scholars agree that phonics instruction, phonological awareness and alphabet recognition are important

aspects of a child's spelling skills development and that reinforcement of corrective spelling practices is critical during these developmental and experimental stages (Bear & Templeton, 1998; Moats, 2005; Nation & Hulme, 1997). The vital aspect of using text messaging to improve a child's spelling skills development is to incorporate spelling instructions and reinforcement of correct spelling practices as the child experiments with the technology.

Scholars labeled five to six stages of spelling knowledge – prephonemic spelling, semiphonemic or early letter name spelling, letter name spelling, within-word pattern spelling, syllable juncture spelling, and derivational constancy spelling (Bear & Templeton, 1998; Lutz, 1986; Moats, 2005). In the prephonemic spelling stage, children ages one through seven engage in invented spellings, look through books, are introduced to sounds and rhythms of language through talking with and hearing stories from books read by adults. At ages four through seven, children enter a semiphonemic or early letter name spelling stage where they continue invented spelling but also show signs of progress by including initial and final consonants in their writing.

Students at the letter name spelling stage, ages five through nine, begin better use of vowels and spell most consonant-vowel-consonant words correctly; and at the within-word pattern stage, six- through 12-year-olds begin to spell long vowel patterns and complex single vowel words (Bear & Templeton, 1998). The final spelling stages, syllable juncture and derivational constancy, involve children ages eight through 18 and students progressively begin to spell more complex words correctly and demonstrate greater word choice in their writing.

When children begin to explore words and writing they do not know, nor are they interested in, the rules of language. They are more excited about exploring the sounds of words and trying to form them, learning their alphabets and how to identify letters, etc. So, the earlier you begin to incorporate spelling and other literacy practices into a youth's activities, the better the chance the youth will develop good literacy habits and be generally successful in reading and spelling.

Introducing young people to text messaging practices at an appropriate time is like introducing them to the word games we all are familiar with: things like pointing out letters and trying to spell words. As children attempt to spell, it is often a comical situation for the parent or teacher who watches a beginner write "bk" in an attempt to write "book". But these instances of invented spelling demonstrate phonological awareness and are very instructional for the observer and educational for the child.

Benefits of Invented Spelling

Invented spelling is a characteristic children exhibit at a very early age in their literacy development and occurs when a child attempts to spell a word based on his or her association of sound with letters (Lutz, 1986), and many researchers agree on the benefit of the technique to the child's literacy development (Clark, 1988; Hodges, 1981; Lutz, 1986; Martins & Silva, 2006). In most cases, the word is incorrectly spelled but lets a teacher identify the level of spelling development of the child. Similarly, a practice called free spelling that existed during the period prior to the standardization of the English language allowed people to write a

word as they thought it sounded and often a word was spelled several different ways in the same treatise (Baron, 2009; Flesch, 1986; Yanzon, 2005). Invented spelling and free spelling are characteristics reflected in the practice of text messaging.

Invented spelling is a major indicator of a child's level of phonological awareness, a critical aspect of the beginning phase of literacy development (Nation & Hulme, 1997; Phillips, Clancy-Menchetti & Lonigan, 2008; Roberts & Meiring, 2006). Phonological awareness is demonstrated by a person's ability to identify sounds contained in a spoken word as structured in the word's smallest elements such as phonemes and initial consonants (Phillips, Clancy-Menchetti & Lonigan, 2008; Martins & Silva, 2006; Stahl & Murray, 1994).

The practice of invented spelling among children can also be important in preventing difficulties in learning to read and promoting a child's phonemic awareness where they are able to identify speech sounds within a word that distinguishes one word from another. This ability to identify phonemes is a "strong predictor of spelling ability" (Nation & Hulme, 1997, p. 162). Adams (1998) indicates that invented spelling is an easier and more comprehensive way for children to gain knowledge about "phonemic awareness and promotes understanding of the alphabetic principle" (p. 387) both of which are important in spelling skills development.

As phonological awareness involves a child's ability to analyze the structure of a word based on its sound, it is instructive to understand that words are composed of consonants and vowels. Normally, consonants take on the hard

sounds in words while vowels, in many cases, take on soft sounds or are silent in their presentation. In a study that examined 10 text messages from a body of 50 messages, all of which were boy-girl missives and romantic in nature, Kul (2007) sought to explore the motivations for letter deletions. Given the nature of the text messages, we can assume that they were written by individuals whose spelling acumen is somewhat developed.

Kul (2007) hypothesized that phonological principles would dictate deletions of letters and segments of words. This is instructive because children in early learning stages of spelling use letter-sound representations to read and spell words (Griffin & Olson, 2004). They delete soft sounding letters such as vowels and retain hard sounding letters like consonants and even replace hard sounding letters with the wrong letter but ones that have similar sounds.

It can be anticipated that some of the words in the text messages the recipients were deciphering literally resembled word attempts that could have been written by a child in an early spelling development stage. “I luv u” could have easily been written by a child in the semiphonemic early learning stage of spelling development in a sincere expression of affection for his mom as well as a texter in a text message. The child would have been using alphabetic representations of the phonemic sounds of the words he wants to use while the texter would simply be using textese, knowing the representations were shorthand for the words.

In his research, Kul (2007) predicted that consonants, particularly those in stressed syllables, would be retained and vowels in unstressed positions would be

deleted based on the “figure and ground” principle expressed by Dressler (1996). As with children in the semiphonemic or early letter name stage of spelling development, texters did in fact retain consonants at word beginnings and in stressed syllables and dropped silent vowels.

Another interesting phenomenon about a child’s spelling skills development that has implications to text messaging is that incorrect spellings of a word has no lasting impact when correct spelling of the word is introduced. This theory was demonstrated by Dixon and Kaminska (2007) in research involving 93 children with a mean age of nine. Children showed a significant beneficial effect on subsequent spelling when presented with a correctly spelled word even when the word was later shown spelled incorrectly. Previous studies with adults (Brown, 1988; Dixon & Kaminska, 2007; Jacoby & Hollingshead, 1990; Katz & Frost, 2001), however, have shown the opposite -- exposure to a misspelled word can cause a negative effect on subsequent spelling of the word.

The authors theorize that children use an explicit (meaning intentional) process of retrieval while adult spellers used an implicit process (meaning no intentional or conscious attempt) to remember the prior experience. The authors also note that the level of encoding at presentation of the word (e.g. writing a correctly presented word; reading a correctly spelled word aloud; embedding targeted words in the text of a story) has some positive effects. Can we then assume a positive effect of combining invented spelling as commonly used in texting with strong levels of encoding as a teaching strategy when demonstrating the correctly spelled targeted word? Dixon and Kaminska’s (2007) research

suggests that a child is so focused on spelling words correctly that even when they misspell a word – as they do in texting – reinforcement with correct spelling can have a lasting effect.

Texting and Spelling

While few to no studies have been published about the effects of text messaging on spelling skills of adolescents in the United States, there has been considerable research published about the topic with European students. All of the research reviewed by this author shows the beneficial effects of texting on spelling skills development among youths.

An important aspect of determining the impact of texting on a young person's spelling skills is the frequency at which the student types and sends a text message. It is presumed that every time a text is typed and sent, a student participates in short spellings, abbreviations and word play (e.g. L8 for "late"). If the number of texts sent is high, it would follow, according to critics of texting, that the student's spelling performance would suffer.

In research that coded the frequency of text messages sent to track spelling accuracy of 86 students in Texas, Shaw, Carlson and Waxman (2007) found no negative effects. Furthermore, 106 people in the southeast of the United States volunteered for a study on the impact of texting on spelling (Gann, Bartoszuk & Anderson, 2010). The participants were surveyed about their text messaging practices and given a spelling test. The research found no significant difference in spelling accuracy among those who texted often, frequently or seldom.

In the Shaw et al. (2007) and Gann et al. (2010) research, participants consisted of college students and older adults. In both cases, the spelling skills of participants are or should be at advanced stages. My research seeks to look at skills of teenagers, some of whom may still be in the developing stages and most of whom are actively participating in texting. What effect does text messaging have on the spelling skills of students in this age group? To find some answers, we must look at research emerging from Europe.

In several studies, Wood and Plester in conjunction with various colleagues (2008, 2009, n.d.) have documented the effects of texting on the literacy skills of children and young adults. One of their studies demonstrates the fear of texting by educators while also demonstrating its benefits. When seeking participants from elementary schools in England, some schools refused to participate either because of a “no cell phone” policy or the nature of the study itself (promoting text messaging among adolescents).

In that pre-post test study, Wood, Jackson, Plester and Wilde (n.d.) assessed the IQ, reading, spelling and phonological awareness levels of 61children ages nine and 10 at the beginning of the school year (two students eventually were eliminated from the research). They split the group in half and gave half the children cell phones to use over the weekend to send text messages.

Every Monday, the phones were collected and the text messages retrieved. Every Monday, both groups also were assessed for reading and spelling. At the end of the 10-week period, all skills – IQ, reading, spelling and phonological awareness – of the students were reassessed.

Overall, children who received a cell phone outperformed the control group, although not all differences reached statistical significance (Wood et al., n.d.). The greatest effect appeared in higher spoonerism scores, which are indications of high phonological awareness. Spoonerisms occur when a person involuntarily rearranges the sequential order of speech and are often utilized in word play games and as elements of humor (MacKay, 1970). Spoonerisms often occur with initial consonants (the hard sounds in words that texters often retain while dropping softer sounding vowels), such as “tons of soil” for “sons of toil” (Merriam-Webster.com, 2010). Surprisingly, educators who had expressed reluctance to allow students to participate later expressed willingness.

Spelling and reading skills improvements appeared to be related to the exercise’s exposure of the participant to printed words, or their attempt to create words. Exposure to print and invented spelling – particularly among children -- have been shown to benefit spelling skills development.

Students who use a high ratio of textisms-to-words in their text messages tend to score higher in literacy measures than those who do not use a high textism to words ratio, particularly in spelling and writing (Plester, Wood & Bell, 2008; Plester, Wood & Joshi, 2009). This indicates a higher development of phonological and orthographic awareness. These same students also demonstrated a deeper level of text language, using a higher level of “youth code” language – a more phonologically based form of text slang that deviates from conventional spellings and is more related to pronunciation. The high spelling scores of these students demonstrate an awareness of the difference between text writing and

formal writing. If they had used forms of textisms in their scholastic achievement tests, they obviously would have scored lower. Another objective of this research is to address the issue of textisms showing up in formal class papers.

Texting and Formal Writing

There is no doubt that textisms are showing up in class papers and other formal writings of students. The voices of educators expressing outrage have been well documented in the media. So why are students allowing this to happen? If they are aware that these are errors, shouldn't they move to correct their mistakes in the future?

Linguist Naomi S. Baron (2009) points out that language is "rule-governed behavior" and if the language community follows the rules, others will recognize when errors in writing are made (p. 44). Even spelling was without rules until standardization of the English language in the 18th century. However, society has shifted again from linguistic concerns and now is focused on "tolerance and personal expression. . . . School is no longer necessarily a place to instill a sense that linguistic rules (or even linguistic consistency) matter" (p. 44). Hodges (1981) was concerned about the lack of attention to spelling skills development in preparing teachers for the classroom, teachers who went on to reflect their training by preparing students for spelling tests based memorizing a list of words that would be on the test.

Given theses patterns, is it any wonder that the structures for adhering to language rules are being violated? Is it surprising, then, that one-third to one-half of adolescents surveyed in a Pew Internet and American Life Project said they

have used textisms in class papers and other formal class assignments (Tilley, 2009). On the other hand, David Crystal (2008), asked teens if they would use textisms in their school work and was told: “Why would you ever want to do that?” and “You’d have to be pretty stupid not to see the difference” between formal and informal writing (p. 152).

In research examining use of textisms in formal and informal writings, instructions to 383 adult participants did not specify whether or not they could use textisms in their writing samples (Rosen et al, 2010). The results yielded limited use of textisms in the formal writings, with linguistic textisms – lower case “i” instead of capital “I” or leaving out an apostrophe -- used more than contextual textisms – all caps to express emotion or use of emoticons. For the purposes of the current study, the fact that textisms appeared at all in formal writings of these adults is instructive.

Rosen et al (2010), hypothesized that the Low-Road/High-Road Transfer of Situated Learning Theory would prevail in their results. The theory suggests that when presented with closely related tasks, a person will apply a low road and almost knee-jerk transfer of learned habits to resolve the closely related task. For example, a student will transfer tactics used to solve homework problems when faced with similar problems on an exam (Perkins & Salomon, 1994). When the task appears to be unrelated to another, a person will apply a conscious high road effect. For consideration in the current study, a person who practices high texting use would theoretically transfer that use into writings that appear closely related

to their everyday informal (texting) writing. The question for texters is whether or not they view school writing as formal versus informal writing.

Texting as a Teaching Tool

New technologies often are criticized for their negative impact on society. We remember the concerns during the advent of television that it would create a nation of zombie boob-tube watchers and divert attention to frivolous television watching instead of more productive activity. Even radio was criticized for its negative impact though it opened up a whole new world for society: The “War of the Worlds” radio program created mass hysteria in some parts of the United States. And text messaging is no different.

In my discussion of the effects of text messaging on spelling development of young people, I have been careful to emphasize that texting alone does not demonstrate the benefit. Texting primarily identifies levels of phonological awareness and other literacy acumen as well as immerses the texter into the practice of word creation. But texting must be combined with professional and consistent reinforcement for significant spelling skills development to occur.

More frightening to critics of textisms is that many educators side with students who argue their misspellings should not receive reductions in school papers and exams. Why deduct for spelling errors when the test measures comprehension (Yanzon, 2005)? Deductions should be based on content.

As mentioned earlier, children learn to spell in stages and incorporate invented spelling techniques that aid in their development. Combining the use of invented spelling with formal spelling reinforcement allows instructors to develop

more effective teaching techniques (Lutz, 1986). Roberts and Meiring (2006) examined the impact of teaching spelling of words phonetically by targeting words directly or embedding targeted words among other texts. In their year-long study involving 55 first-grade students separated into two groups, the researchers showed that teaching phonics in the context of spelling (meaning focusing on individual words) was more effective than teaching phonics in the context of children's literature (identifying words in short stories). In the administration of three spelling tests of phonetically regular real and pseudo words and high-frequency sight words at three different points of the year, the spelling context group outperformed the literature context groups in spelling outcomes.

Reasons for the superior performance include the spelling group's focus on assigning letters to the initial and final position of the words and their attention to the segmentation of individual sounds from pronunciation of the words and to represent each sound with a letter (Roberts & Meiring, 2006). The spelling group's focus was on the phonemic properties of the individual words while the literature group's focus might have been somewhat diverted by attention to comprehend the discourse of the text.

Could young students benefit from a teacher using textisms as an attention-getting mechanism while embedding the correct spelling of the same word in some kind of word play spelling game? It is important also to note that by the end of the first grade in Roberts and Meiring's research, the spell group still scored higher, but not significantly so. The researchers indicate that the drop in significance occurred after instruction had been discontinued.

For young students at early spelling development stages, incorporating cell phone text messaging can spark a curiosity in writing. Allowing young students to text their thoughts and words will be viewed as a fun exercise and perhaps a new frontier. The resulting text then can be incorporated into a class exercise where spelling fundamentals and corrective measures are emphasized.

Wood et al.'s (n.d.) cell phone experiment proves instructive here as well. They mainly were interested in the effects of the texting on their literacy development and did not follow up with instructive measures as suggested here. Just as the spelling difference closed between spelling and literature groups in Roberts and Meiring when instruction ceased, so too did the use of cell phones to text dropped off as time passed in the Wood research. This is important because spelling significance between texters and non texters was highest when use of the technology was at its peak. The point is that once the technology becomes familiar, use of it can drop off if the instructor is not constantly keeping the use of technology interesting.

Older students who are not good spellers did not fully develop their skills in these spelling stages as they aged and, therefore, their phonological, phonemic and orthographical awareness skills are depressed. This provides an additional barrier to improving their skills because this deficiency makes it is more difficult to engage them in spelling and reading exercises. For these students, use of generated text messages still can be useful in correcting the deficiencies by engaging the texter. The instructors can follow the example of researchers who had participants translate text messages into standard English. This allows the

instructor to identify a student's level of phonological awareness and where deficiencies exist. Focus then can be targeted to build where skills are weak.

Making learning fun and interesting can help instructors get past the barriers created by below level older spellers. A group of adult students learning new reading skills in a Washington literacy program expressed to incoming students the benefit of the structured program they were about to participate in (Moats, 2001). A Pew survey (Lenhart et al., 2010) shows that teens desire literacy reinforcement: More than 77 percent of teens surveyed said use of computer-based tools such as games, websites and multimedia programs to teach writing as well as more in class writing time would improve their skills. Better writing skills also imply improved spelling skills. Teens also are motivated when they can select topics of interest to them, have an opportunity to be creative and are challenged by instructors who give detailed feedback.

Thus, my research questions are:

RQ 1. Is there a spelling effect difference on high text users compared to low text users?

RQ 2. Does the number of months spent texting impact a user's spelling skills?

RQ 3. Is there a spelling effect difference between ninth and 12th grade students who use text messaging?

RQ 4. Are teens aware that textisms are not appropriate for formal school papers?

Method

Participants

Participants for my study included ninth and 12th grade students at a high school in a southern suburb of Chicago. The final corpus included six students who took the ninth grade spelling test and 14 students who took the 12th grade spelling test. Among the 14 students who took the 12th grade test were three ninth graders. I included their data with the 12th grade data because they took the 12th grade spelling test.

Ninth grade students – including the three students who took the 12th grade test -- ranged from 14 to 15 years of age. Twelfth grade students ranged from 17 and 18 years of age.

Research Instrument Used

My project involved filling out a questionnaire, a spelling test consisting of 22 words for each grade level, writing a formal email to the principal and answering one last question with a “yes” or “no” response. The question sought to determine if the students were aware that textisms should not be used in formal school papers. The spelling words were compiled from lists of the most misspelled words.

I shared my spelling test words with the principal who expressed some concern that for his student population the words might be somewhat unfamiliar. He recommended that I also share them with the reading coach. The reading coach confirmed that the words were age appropriate.

Procedures

To collect data, I approached the principal at a high school in a southern suburb of Chicago seeking permission to conduct my research at his school. The principal approved and I requested to conduct the research with separate groups of ninth graders and 12th graders on the same day. The principal informed teachers that he approved the project and that they were to solicit volunteers to participate. Student volunteers were given consent forms to be signed by their parents and 18-year-olds were given consent forms they could sign themselves; however, all of the students chose to have the consent forms signed by their parents.

On the day the research was to be conducted, I spent the first hour with ninth graders and the second hour with 12th graders. However, only two ninth graders showed up on the first day and I asked the principal if he would solicit more ninth grade volunteers and allow me to return on another day to further my research. He approved and I returned a second day where four more ninth graders attended.

Prior to conducting the experiment, I explained to each student that I was a graduate student at Governors State University conducting research on text messaging for a project that would allow me to graduate. I told them the information they provided would be kept confidential, that their names would not be on any paper, and the results would not be shared with any of their teachers or faculty members. I also assured them that no grades would be given for their participation. At the end of each session, I gave each student a $5 McDonald's gift certificate in appreciation for their participation.

On the first day I conducted separate experiments for ninth and 12th graders in the computer lab where each student had his/her own computer. I had prepared file cards marked with the grade level 9 or 12 and a number (e.g. 9-1 for ninth grade, student 1). I shuffled the cards and asked each student to take one. I asked the students to mark anything they turn in with the card number. This would allow me to match papers turned in with the student (spelling test, questionnaire, email, etc.) and also keep anonymity of the students.

The students filled out the questionnaire in pencil and they were collected. I then gave the spelling test, pronouncing each word twice, including the word in a sentence and repeating it again. Then I collected the spelling test. I then asked each student to write their principal a short “formal” note of no more than four sentences expressing they would not be in class, the reason for their absence, and requesting that any homework assignment be given to their best friend whom they were to identify as their “best friend” and include that person’s fictional name. I stressed that the email was a formal message to their principal. The students typed their note to the principal on their computer and sent it to a printer in the room.

Lastly, I read the following question to the students and asked them to write “yes” or “no” on their file card:

“When you are writing a formal letter, a formal class paper, or taking a test, is it OK to use language and spellings that you would use in a text message – such as a smiley face, abbreviations like LOL, or other textisms?”

The cards then were collected.

Results

The first research question I explored was: Is there a spelling effect difference between high text users compared to low text users? Responding to a questionnaire, students said they sent as few as three texts per day to as many as 300. In order to categorize text use for comparison, I found the median (100). Low text use was categorized as fewer than 100 texts per day and high text use was categorized as 100 or more texts per day. There were nine subjects in the low text use group and 11 subjects in the high text use group.

I ran a T-Test and found no significance between the two groups, $t(18)=.529$, $p>.05$. The mean score for low text users was 8.8 ($SD=4.62$). The mean score for high text users was 7.81 ($SD=4.4$), meaning on average eight words were spelled correctly. A Levene's Independent Samples Test showed equality of variances between the low text user and high text user groups. As a result of this T-Test, I found no support for a spelling effect difference between high text users and low text users.

My second research question was: Is there a spelling effect difference on text users in the ninth and 12th grades. There were six subjects in the ninth grade competency group and 14 subjects in the 12th grade competency group. On average, subjects in the ninth grade competency group spelled 14 words correctly, $M = 13.66$ ($SD = 3.26$). Participants in the 12th grade competency group spelled an average of six words correctly, $M = 6.0$ ($SD = 2.3$).[1] Results of a T-Test showed a that a variable was having a significant effect on spelling between ninth and 12th graders, $t(18) = 6.002$, $p < .001$. A Levene's Independent Samples Test

showed equality of variances between the groups. As a result of this test, I found support for a spelling effect difference between ninth and 12th grade competency groups.

Further analysis of the data showed two students in the ninth grade group categorized as low text users spelled on average 16 words correctly, $M = 16$ (SD=1.41) and four students in the ninth grade group categorized as high text users spelled on average 13 words correctly, $M = 12.5$ (SD=3.41). There were seven students in the 12th grade group categorized as low text users who spelled an average of seven words correctly, $M = 6.85$ (SD=2.54) and seven students in the 12th grade group categorized as high text users who spelled on average five words correctly, $M = 5.14$ (SD=1.86).

A third research question asked: Does the number of months spent texting impact a user's spelling skills? I categorized participants into two groups based on the median number of months spent texting, which was 45 months. Short history texters were categorized as below 45 months. There were 10 subjects in the short history group. Long history texters were categorized as 45 months and above. There were 10 subjects in the long history group.

The short history group spelled an average of seven words correctly, $M = 7.5$ ($SD = 3.7$). The long history group spelled an average of nine words correctly, $M = 9.1$ ($SD = 5.06$). A Levene's Test showed equality of variances between the groups and a T-Test showed no significance $t(18) = -.803$, $p = .433$. As a result of this test, I found no text messaging effect on spelling between short history and long history texters.

A final research question asked was: Are teens aware that textisms are not appropriate for formal school papers? This survey question was asked in light of the many articles that have been written noting the appearance of textisms in school papers (Coulter, 2008; Douglas, 2008; Ross, 2007) and Hashemi & Segerstad's (2008) self-assessment survey of students who said they were aware that textisms are not appropriate for formal papers. I read aloud a question about the appropriateness of using textisms in formal papers and asked the participants to write "yes" or "no" on the back of a file card I had passed out prior to the beginning of the research tasks. Every student wrote "no" on the back of their card.

Prior to asking the survey question, I asked all participants to write a brief (no more than four sentences) email to their principal explaining that he or she would be absent from school tomorrow and if any homework assignment could be given to his or her best friend. Two items that would be considered textisms showed up in one student's response. One student did not respond.

Discussion

This research explored the effects of text messaging on the spelling skills of ninth and 12th-grade students. I looked at whether the number of texts sent (high texters vs. low texters) had an effect and if the length of time spent texting (in months) had an effect. My results found no negative effect of text messaging on spelling skills of participants. I also did not find a positive effect, which is surprising because of other research that showed a benefit of texting to literacy

skills development (Gann, Bartoszuk & Anderson, 2010; Roschke, 2008; Shaw, Carlson and Waxman, 2007).

Texting has become very popular among American teens and my research reflected that popularity. A Pew research study found that one-in-three teens send more than 100 text message a day (Lenhart, Ling, Campbell, & Purcell, 2010). More than half of my participants said they send 100 or more text messages a day.

While there was no spelling effect based on text use, I did, however, find statistical significance when testing for grade competency ($t[18] = 6.002$, $p < .001$). Ninth graders tended to spell better than 12th graders, though texting practices were not determined to be the variable causing the significance. Since some ninth graders were among high texters and texting was not a factor for their results, It is difficult to hypothesize about why I got my results. Perhaps their higher scores are a result of more focus on their school work.

Regarding the concern that textisms are showing up in formal papers, researchers are finding that students overwhelmingly indicate the inappropriateness for textisms in such writings, though it does slip through (Crystal, 2008; Faulkner & Culwin, 2005; Hashemi & Segerstad, 2008; Plester, Wood, & Joshi, 2009). In a study involving about 2,500 young adults ages 18 to 25, Rosen, Chang, Erwin, Carrier and Cheever (2010) found little use of textisms in formal writings. The researchers examined a hypothetical letter of complaint sent to a company about quality of service. One-in-five participants used linguistic textisms, mostly a lowercase “i” followed by no apostrophe, while one-in-20 used contextual textisms (a word in all capital letters).

These findings were apparent in my research results. In response to a questionnaire inquiring about the appropriateness of using textisms in formal writings, each student responded “no” -- textisms are not appropriate for formal writings, including school assignments.

Additionally, Wood et al. (n.d.) found that improvements in reading and spelling (reaching significance) were mostly associated with the number of messages sent and received. This was not found in my research. While differences did not reach significance, those who sent the highest number of texts per day in my research scored slightly lower than those who sent fewer texts per day, M = 7.81 (SD = 4.40) and M = 8.88 (SD = 4.62), respectively.

Similar to Gann, Bartoszuk and Anderson (2010), words selected for my test may have been too difficult. They were taken from lists on the Internet of the most misspelled words. I shared the list with the principal who expressed reservation about the familiarity of his students with some of the words. The principal referred me to the school reading instructor who approved the list as being grade appropriate.

Research shows that a child who may not be interested in writing at school can be very actively involved in text messaging or writing in chat rooms or instant messaging on the Internet, all forms that employ textisms (Witte, 2007). This is because the attraction of young people to text messaging is that it is a pleasurable and playful experience. In my study only one participant did not own a cell phone, and some participants received their first cell phone at age 10 or younger. It can be assumed that many of the participants also engaged in text messaging at these

young ages. And if they did, my research should have demonstrated spelling benefits as a result of being involved in word play, word creation and reading. Those spelling benefits were not reflected in my findings.

I am also surprised that texting had no beneficial effect on spelling skills of my participants because texting mimics the practice of invented spelling. During the critical early stages of their spelling skills development, children experience the letter name and within-word pattern stages, which involve 5- to 12-year-olds (Bear & Templeton, 1998). In these stages, children move progressively through invented spellings, recognizing word beginnings and endings and long and short vowel patterns, and spelling complex single syllable words, among other developments.

The practice of invented spelling has been found indispensible in developing the spelling skills of children. Through invented spelling, children stimulate their ability to explore words at the phoneme level (Martins & Silva, 2006), an obvious measure of improving both accuracy in spelling and the alphabetization process since identifying phonemes is breaking down words to their cellular level. Invented spelling – coupled with immediate and accurate feedback – has proved to be a more effective tool in improving a child's spelling skills than treatments such as copying correct spellings (Dixon & Kaminska, 2007).

A concern about text messaging is sometimes the message is not immediately understood. For example, does "I am btr" mean "I am better" or "I am bitter"? But even here, where literacy skills and spelling are concerned,

deciphering what “btr” stands for is itself a practice in alphabetization, phoneme analysis and would cause the reader to consider the context of the conversation to determine which word is more appropriate. He would put into motion a variety of literacy skills to determine the proper translation.

To get insight into the students’ use of abbreviations, I asked participants in my study to write three abbreviations they most often use. Some students also wrote what the abbreviation stood for. As anticipated, many wrote LOL and those who wrote what it stood for correctly spelled “laugh” or “laughing out loud.” In fact, all words were spelled correctly by those who chose to write them out. In line with previous research citing motivations for using abbreviations and short spellings, participants in my research responded in various forms of “it saves space and time”, “it’s easier,” and even “it’s cool”.

I also wanted to determine the use of textisms in a student’s formal writing. I asked participants to write a hypothetical formal note to their principal informing him/her that the student would be absent the next day. I asked the student to make up a reason for their absence and to request that the homework assignment be given to their best friend. I asked them to make up a name for their best friend and specifically use the words “best friend”. Each student had access to a computer with Microsoft Word and a printer.

The weaknesses in the design of this test is I did not make sure the predictive spelling or spell check elements of the program were turned off, so I don’t know if any of the words were computer corrected as the student typed.

Also, I did not format the pages in advance so all would print in the same font, spacing, etc.

Nevertheless, there were some examples of papers written appropriately – both ninth and 12th grade -- for formal presentation when merely looking at grammar and spelling. There also were some that were unacceptable with grammar and spelling mistakes. One student, a ninth grader, used textsims -- the expressive “soo” and all uppercase “THANK YOU”.

Interestingly, no student indicated they frequently used the abbreviations “BF” (best friend) or “BFF” (best friend forever), abbreviations that have gotten media attention when discussing text messaging, even appearing in television commercials. That’s one reason I asked students to request the homework assignment specifically be requested to be given to their “best friend”, though some only used the word “friend”. I expected “BF” or “BFF” to appear in at least one formal note.

Limitations

A limitation in my research is the small sample involved in addition to the weakness of literacy skills participants demonstrated. Students in my corpus, particularly those in the 12th grade, already were demonstrating inefficient spelling and other literacy skills. Perhaps this can be attributed to other factors such as socio-economic conditions and inefficient literacy training at school or home during their early stages of literacy development, but certainly not text messaging. However, this research did not further examine the cause of the differences.

Other socio-economic demographics of my corpus that might inform my test results include the fact that students at the high school rank below average in statewide testing of 11th grade students in math, reading and science scores, 42%, 30%, and 34%, respectively, according to 2010 Prairie State Achievement Examination scores (Greatschools.org, 2011). The student body consisted of 85% African American, 11% White, and 4% Hispanic. The income levels were relatively low, qualifying 73% of the students for the free or reduced-price lunch program. Low income children usually attend schools with fewer resources which can impair their development in their formative years.

When separated, within school statistics show that low income students scored at least 20 points lower on each state test category than non-low income students. All of these factors may have contributed to my study's results, though I did not track the income levels of the students' families who participated.

Conclusions and Recommendations

While there is a debate about the impact of text messaging on spelling skills, the fact is texting is here to stay – at least until the next trend in communication comes along. The best thing critics can do is come to grips with that fact and educators should take advantage of the interest that young people have in the technology to get them more interested in the writing process.

The use of game playing is a proven method of teaching children to read, spell and count. I recommend that texting be incorporated in some aspects of school instruction at the earliest stages possible because young people are texting. Griffith and Olson (1992) suggest several strategies to involve a child in phoneme

awareness and the phonological structure of words. Though at the time the child is too young to realize the depth of letter and sound recognition he is exercising, these are excellent skills for reading and spelling improvement.

Such exercises using text messaging could involve a teacher asking a beginning speller to text her (on play phones or other fun method implying a text messaging experience) the “ch” sound, the “oo” sound, and the “z” sound, all phonemes that represent the word “choose”. Several classes could be taken up just elaborating on how these sounds relate to choose.

Older poor spellers demonstrate problems in letter sequence recall abilities because they never internalized the relationship between speech sounds, print representation, and word meaning (Moats, 2005). These elements of phonemic and phonological awareness are extremely useful in spelling and reading development. That’s why texting, even with adults, can be used as a tool to detect spelling deficiencies. Moats (2005) suggests that young child – and perhaps even an older person who shows early learning spelling capacities -- might spell “yoh” instead of the word “watch” because “y” has the “w” sound and “h” has the “ch” sound to a beginner.

Furthermore, it is important to have learners actually write in order to improve their phonological skills because word games and the like that only utilize speech allow the participant to learn about rhyme and other linguistic facts (Martins & Silva, 2006). Writing and reading, on the other hand, allows the experience of segmental phonological awareness – consciously making an attempt to display words alphabetically and syllabically correct.

To address the small sample size in my study, a future study should draw from a wider range of students – age, ethnicity, income level, and scholastic scores. Also, my choice of words, though grade appropriate, perhaps were too difficult. Future studies could use words that are eighth grade appropriate that should be familiar to a broader population.

I found interesting the fact that ninth graders scored significantly better than 12th graders. Future research could do a similar study with a larger group to determine if my results hold true, and if so, explore further to find out what variable is causing the difference.

With the development of more advanced mobile devices to send texts, the keyboards are more representative of a typewriter keyboard. Instead of having to hit the “2” key three times to write a “c”, the writer only needs to hit the “c” key. Future studies could examine if full keyboards on smart phones cause writers to spell out more words instead of using short spellings.

In a society where the culture leans toward instant gratification and receiving everything fast, is it any wonder that short forms used in text messaging would become popular? But do these short forms hurt spelling skills development? My research found that students in my study already demonstrated diminished spelling skills, not attributable to text messaging. Instead of condemning the new technology, perhaps our anger should be aimed at the disparities in education and working to solve them.

Finally, Lutz (1986) had it right when she wrote that the use of invented spelling combined with formal spelling instruction cn allow tchrs 2 dvlop more effctve spllng progrms.

She did not exactly write it like that, but you get the message.

References

Adams, M.J. (1998). Beginning to read: Thinking and learning about print. Cambridge, MA: MIT Press.

Atwell, J. (2005). Mobile Technologies and Learning: A technology update and m-learning project summary. Paper published on the Learning and Skills Development Agency website. Retrieved from www.lsnlearning.org.uk/search/Resource-32304.aspx

Baron, N.S. (2005). Instant messaging and the future of language. *Communication of the ACM, 48*(7), 29-31. Retrieved from http://proxy.govst.edu:2552/ehost/pdfviewer/pdfviewer?hid=119&sid=76c5d497-5f73-467c-8f20-1605411b30bf%40sessionmgr113&vid=5

Baron, N.S. (2009). Are Digital Media Changing Language? *Educational Leadership, 66*(6), 42-6. Retrieved from http://proxy.govst.edu:2263/hww/results/external_link_maincontentframe.jhtml?_DARGS=/hww/results/results_common.jhtml.44

Bear, D.R., & Templeton, S. (1998). Explorations in developmental spelling: Foundations for learning and teaching phonics, spelling, and vocabulary. *The Reading Teacher, 52*(3), 222-242. doi: 35977833

Berman, I. (2006). E-mail "inspired" changes in non-native legal discourse. *Language@Internet,* 3. Retrieved from http://www.languageatinternet.de/articles/2006/372/index_html/

Boneva, B. S., Quinn, A., Kraut, R. E., Kiesler, S., & Shklovski, I. (2006). Teenage communication in the instant messaging era. In R. Kraut, M. Brynin

and S. Kiesler (Eds). *Computers, Phones, and the Internet: Domesticating Information Technology* (pp. 201–218). New York: Oxford University Press.

Bradley, J. M., & King, P. (1992). Effects of Proofreading on spelling: How reading misspelled and correctly spelled words affects spelling accuracy. *Journal of Reading Behavior, 24*(4), 413-32. Retrieved from EBSCOhost.

Brown, A. S. (1988). Encountering misspellings and spelling performance: Why wrong isn't right. *Journal of Educational Psychology, 80*(4), 488-494. doi:10.1037/0022-0663.80.4.488

Clark, L.K. (1988). Invented spelling versus traditional spelling in first graders' writings: Effects on learning to read and spell. *Research in the Teaching of English*, *22*(3), 281-309.

Coulter, P. (2008, May 27). Friend or foe: Impact of texting, blogs on writing up for debate. *The Pantagraph*. Retrieved from http://www.pantagraph.com/news/article_5bb15283-2b9d-5099-a012-db916059f948.html

Craig, D. (2003). Instant messaging: The language of youth literacy. *The Booth Prize Essays*. Retrieved from http://bootheprize.stanford.edu/0203/PWR-Boothe-Craig.pdf

Crystal, D. (2008). Txtng: the gr8 db8. New York: Oxford University Press.

Dixon, M., & Kaminska, Z. (2007). Does exposure to orthography affect children's spelling accuracy? *Journal of Research in Reading, 30*(2), 184-197. DOI:10.1111/j.1467-9817.2007.00337.x

Dorfmeister, J. (2007). Computer mediated communication. In M.P. French (Ed.), *Trends: A collection of literature reviews written by MED students from EDU 612* (pp. 26-33). Retrieved from http://www.lourdes.edu/Portals/0/Files/Education/Trends.pdf

Douglas, H. (14, September 2008). Why pupils must never be allowed rong spellings in examinations: Professor's call for reform "is going 2 far". *Sunday Express (Lancashire Edition)*. Retrieved from LexisNexis ® Academic database.

Dressler, W.U. (1996). Principles of naturalness in phonology and across components. In Hurch, B. & Rhodes, R.A. (eds.), *Natural phonology: The state of the art.* Berlin: Mouton de Gruyter. 41-52.

Entner, R. (2010, January 27) Underaged-texting: Usage and actual cost. *Nielsenwire Online*. Retrieved from http://blog.nielsen.com/nielsenwire/online_mobile/under-aged-texting-usage-and-actual-cost/

Faulkner, X., & Culwin, F. (2005). When fingers do the talking: A study of text messaging. *Interacting with Computers, 17*: 167-185. Retrieved from doi:10.1016/j.intcom.2004.11.002

Flesch, R. (1955). Why Johnny can't read—And what you can do about it. NewYork: Harper.

Gann, R., Bartoszuk, K., & Anderson, J. (2010). If u txt 2 much, duz it mean u cant spell: Exploring the connection between SMS use and lowered performance in spelling. *The International Journal of the Book, 7*(2), 69-77.

Goggin, G. (2004, January 12). “mobile text”. M/C: A Journal of Media and Culture, *7*, http://www.media-culture.org.au/0401/03-goggin.php

Greatschools.org (2011). http://www.greatschools.org

Griffin, P.L., & Olson, M.W. (1992, March). Phonemic awareness helps beginning readers break the code. *The Reading Teacher*, *45*(7), 516-523. Retrieved from http://www.pbs.org/teacherline/courses/rdla155/pdfs/c2s2_4phonawhelps.pdf

Grinter, R. E., & Eldridge, M. A. (2001). Y do tngrs luv 2 txt msg? In W. Prinz, M. Jarke, Y. Rogers, K. Schmidt, & V. Wulf (Eds.). Proceedings of the Seventh European Conference on Computer Supported Collaborative Work, Bonn, Germany, (pp. 219-238).: Kluwer Academic. doi: 10.1007/0-306-48019-0_12

Grinter, R.E., & Eldridge, M. (2003, April). Wan2tlk?: Everyday text messaging. Paper presented at the CHI 2003 Conference on Human Factors in Computing Systems. Fort Lauderdale, FL. Retrieved from http://www.cc.gatech.edu/~keith/classes/ubicomplexity/pdfs/crit/grinter-sms.pdf

Hashemi, S.S., & Segerstad, Y.H. (2008, September 18-20). *The role of digital text creation in the writing of schoolchildren*. Paper submitted at the Second International DREAM Conference: Digital Content Creation: Creativity, Competence, Critique. University of Southern Denmark, Odense, Denmark.. Retrieved from

http://www.dreamconference.dk/nyheder/Hashemi,%20Sylvana%20et%20al.. pdf.

Hedrick, W. (2008). "Textese": A literacy teacher's nightmare or Benjamin Franklin's dream come true? *Voices From the Middle, 15*(4), 61-62. Retrieved from Education Module. doi: 1498097561

Hodges, R. (1981). Learning to spell. Urbana, IL.: National Council of Teachers of English. Excerpt retrieved from http://eric.ed.gov/PDFS/ED202016.pdf

Huang, L. (2008, August 11) The Death of English (LOL): In an experiment, the more adept children were at text messaging, the better they did in spelling and writing. *Newsweek 152*(6). Retrieved from Research Library Core. doi: 1526449231

Jacobs, G.E. (2008). We learn what we do: Developing a repertoire of writing practices in an instant messaging world. *Journal of Adolescent & Adult Literacy, 52*(3), 203-211.

Jacoby, L. L., & Hollingshead, A. (1990). Reading student essays may be hazardous to your spelling: Effects of reading incorrectly and correctly spelled words. *Canadian Journal of Psychology, 44*(3), 345-358. doi:10.1037/h0084259

Katz, L., & Frost, S.J. (2001). Phonology constrains the internal orthographic lexicon. *Reading and Writing: An Interdisciplinary Journal*, 14, 297-332. Retrieved from http://www.haskins.yale.edu/Reprints/HL1209.pdf

Kul, M. (2007). Phonology in text messages. *Poznan Studies in Contemporary Linguistics, 43*(2), 43-57. doi: 10.2478/v10010-007-0013-4

Lacohee, H., Wakeford, N., & Pearson, I. (2003). A social history of the mobile telephone with a view of its future. *BT Technology Journal, 21*(3), 203-211. Retrieved from doi: 10.1023/A:1025187821567

Lawless, J. (2011, March 26). OMG! Online abbreviations make cut for Oxford dictionary. *Chicago Sun-Times*, pp. 12.

Lenhart, A. (2009). Teens and mobile phones over the past five years: Pew Internet looks back. Pew Internet & American Life Project. Retrieved from http://www.pewinternet.org/~/media/Files/Reports/2009/PIP%20Teens%20and%20Mobile%20Phones%20Data%20Memo.pdf

Lenhart, A., Ling, R., Campbell, S., & Purcell, K. (2010, April 20). Teens and mobile phones: Text messaging explodes as teens embrace it as the centerpiece of their communication strategies with friends. Retrieved from Pew Internet & American Life Project at http://www.pewinternet.org/Reports/2010/Teens-and-Mobile-Phones.aspx

Ling, R., & Baron, N.S. (2007). Text messaging and IM: Linguistic comparison of American college data. *Journal of Language and Social Psychology, 26*(3), 291-298. doi: 10.1177/0261927X06303480

Longoria, A., & Stark-Smith, G. (nd). Information exchange and relationship maintenance among American youth: The case of text messaging. Retrieved from http://www.ischool.utexas.edu/~alongo/mgmt/i_txt_my_bf_all_the_time.pdf

Lutz, E. (1986). Invented spelling and spelling development. Urbana, IL. ERIC Clearinghouse on Reading and Communication Skills. Excerpt retrieved from

http://www.svdpsf.com/webpages/eburns/files/Invented%20Spelling%20and%20Spelling%20Development.pdf

MacKay, D.G. (1970). Spoonerisms: The structure of errors in the serial order of speech. *Neuropsychologia*, 8, 323-350. Retrieved from http://mackay.bol.ucla.edu/1970%20Spoonerisms%201970.pdf

Martins, M. A., & Silva, C. (2006). The impact of invented spelling on phonemic awareness. *Learning and Instruction, 16*(1), 41-56. Retrieved from http://www.ispa.pt/NR/rdonlyres/BD49CF7B-4877-414C-B54A6B8B736D34E3/0/AlvesMartinsSilva2006LearningInstruction.pdf

Spoonerism (n.d.). In *Merriam-Webster's* online dictionary (11th ed.). Retrieved from http://www.merriam-webster.com/dictionary/spoonerism

Moats, L. (2001). When older kids can't read. *Educational Leadership, 58*(6), 36-40. Retrieved from http://proxy.govst.edu:2263/hww/results/results_single_fulltext.jhtml;hwwilsonid=DVH5FMR3S3QEVQA3DIMSFGOADUNGIIV0

Moats, L. (2005). How children learn to spell. *Perspectives, 31*, 15-18. Retrieved from http://www.nhsped.net/docs/spelllearn.pdf

Nation, K. & Hulme, C. (1997). Phonemic segmentation, not onset-rime segmentation, predicts early reading and spelling skills. *Reading Research Quarterly*, *32*(2), 154. doi: 13123427

PCmag.com (2009a). Definition of instant messaging. Retrieved from http://www.pcmag.com/encyclopedia_term/0,2542,t=instant+messaging&i=45045,00.asp

PCmag.com (2009b) Definition of text messaging. Retrieved from http://www.pcmag.com/encyclopedia_term/0,2542,t=SMS&i=51563,00.asp

Perkins, D. & Salomon, G. (1994). Transfer of learning. In T. Husen and T. Postlethwaite (eds) The International Encyclopedia of Education, 2nd Edition, Vol. 11. Oxford: Elsevier Science Ltd.

Pew Research Center (2010, April 20). Teens and mobile phones: Text messaging explodes as teens embrace it as the centerpiece of their communication strategies with friends. Summary of findings retrieved from http://www.pewinternet.org/Reports/2010/Teens-and-Mobile-Phones/Summary-of-findings.aspx

Phillips, B.M., Clancy-Menchetti, J., & Lonigan, J.C. (2008). Successful phonological awareness instruction with preschool children. *Topics in Early Childhood Special Education*, *28*(1), 3-17. doi: 10.1177/0271121407313813

Plester, B., Wood, C., & Bell, V. (2008). Txt msg n school literacy: Does texting and knowledge of text abbreviations adversely affect children's literacy attainment? *Literacy, 42*(3), 137-144. Retrieved from http://ejournals.ebsco.com/direct.asp?ArticleID=4A6E9B3A56EDDF242121

Plester, B., Wood, C., & Joshi, P. (2009). Exploring the relationship between children's knowledge of text message abbreviations and school literacy outcomes. *British Journal of Developmental Psychology, 27*, 145-161. doi:10.1348/026151008X320507.

Reardon, M. (2009, September, 23). Text messaging explodes in America. *CBSnews.com*. Accessed on December 29, 2009 at

http://www.cbsnews.com/stories/2008/09/23/tech/cnettechnews/main4471183.shtml

Roberts, T.A., & Meiring, A. (2006). Teaching phonics in the context of children's literature or spelling: Influences on first-grade reading, spelling, and writing and fifth-grade comprehension. *Journal of Educational Psychology, 98*(4), 690-713. doi: 10.1037/0022-0663.98.4.690

Roschke, K. (2008). The text generation: Is English the next dead language? Master's thesis retrieved from http://mwtc.composing.org/grad/projects/roschke.pdf

Rosen, L.S., Chang, J., Erwin, L., Carrier, L.M. & Cheever, N.A. (2010). The relationship between "textisms" and formal and informal writing among young adults. *Communication Research, 37*(3), 420-440. doi: 10.1177/0093650210362465

Ross, K. (2007, November 19). Does text messaging hurt student writing skills: Teachers say text messages r ruining kids' riting skills. *American Teacher.* Retrieved from http://www.aft.org/pubs-reports/american_teacher/nov07/speakout.htm

Shaw, D.M., Carlson, C., & Waxman, M. (2007). An exploratory investigation into the relationship between text messaging and spelling. *The NERA Journal, 43*(1), 57-26. Retrieved from http://proxy.govst.edu:2263/hww/results/results_single_fulltext.jhtml;hwwilsonid=AGVFS5PI4TGLJQA3DILCFGOADUNGIIV0

Smith, N. (2010). luv 2 txt. *Scholastic Choices, 26*(1), 12-14.

Stahl, S. A., & Murray, B. A. (1994). Defining phonological awareness and its relationship to early reading. *Journal of Educational Psychology, 86*(2), 221-234. doi:10.1037/0022-0663.86.2.221

Sutherland, J. (2002, November 11). Cn u txt? *The Guardian.* Retrieved from http://www.guardian.co.uk/technology/2002/nov/11/mobilephones2/print

Thurlow, C., & Brown, A. (2003). Generation txt? The sociolinguistics of young people's text-messaging. *Discourse Analysis Online, 1*(1). Retrieved from http://extra.shu.ac.uk/daol/articles/v1/n1/a3/thurlow2002003-t.html

Tilley, C. (2009). Texting. *School Library Monthly, 26*(1), 40-42. Retrieved from Education Module. doi: 1843494941

Witte, S. (2007). "That's online writing, not boring school writing": Writing with blogs and the Talkback Project. *Journal of Adolescent & Adult Literacy, 51*(2). Retrieved from http://ms.echalksd.com/www/pd_ms/site/hosting/blog_and_writing.pdf

Wood, C., Jackson, E., Plester, B. & Wilde, L. (n.d.). Children's use of mobile phone text messaging and its impact on literacy development in primary school. Retrieved from http://74.125.155.132/scholar?q=cache:ZS1CdUcZxpUJ:scholar.google.com/+Children%E2%80%99s+use+of+mobile+phone+text+messaging+and+its+impact+on+literacy+development+in+primary+school&hl=en&as_sdt=0,14

Yanzon, E.R.V. (2005). Does text messaging affect the spelling skills of the students? *Far Eastern University English Language Journal, 1,* 33-37.

Retrieved from

http://www.philjol.info/philjol/index.php/ELJ/article/view/44/41

End Note

1. The three ninth graders who took the 12th grade spelling test scored among the top four in that group.

Appendix A

Questionnaire

Assigned student identification number: _____

Male or Female (circle one)

Your Age: _____

Your grade in school: 9th or 12th (circle one)

Note to student: The following questions are meant to reveal information about your text messaging practices. Please answer each question. Your answers will not be graded and your identity will not be known, so answer as accurately as possible. For our purposes, text messaging is defined as sending a text message via a cell phone or other hand held device. We are not referring to emails sent from a laptop or desktop computer.

1. Do you have your own cell phone? Please circle one answer below.

   Yes No

   (If you answer no, then go to question 3.)

2. How old were you when you got your own cell phone?

3. How often do you text message, even if you do not own a phone? For example, once a day, approximately 10 times a day, once a week, 3-4 times a week, never, etc. Please be specific.

4. How long have you been text messaging? For example, one month, six months, one year, two years.

5. Whom do you text most often? (Please circle one.)

   Parents Siblings Friends

   Other
   _____

6. Do you use abbreviations in your text messages? (Circle one answer below.)

   Yes No

(If you answer no, then go to question 9.)

7. Provide three abbreviations you most often use and what the abbreviation stands for.
8. What are some of the reasons you abbreviate words in a text message?

9. Would you say your spelling skill is (circle one):

Very Good Good Not so Good Bad

Appendix B

Spelling Words

9th Grade Spelling Words		12th Grade Spelling Words	
1.	Persuasive	1.	Protagonist
2.	Laugh	2.	Etymology
3.	Indigenous	3.	Parallel
4.	Ludicrous	4.	Intrinsic
5.	Facilitate	5.	Plagiarize
6.	Pronounce	6.	Quarantine
7.	Acronym	7.	Rhetoric
8.	Reliability	8.	Ludicrous
9.	Restaurant	9.	Peripheral
10.	Thieves	10.	Ambiguity
11.	Siege	11.	Juxtaposition
12.	Stereo	12.	Menagerie
13.	Nighttime	13.	Leisure
14.	Intrusive	14.	Millennium
15.	Neighborhood	15.	Laugh
16.	Audience	16.	Hemorrhage
17.	Foreign	17.	Sovereign
18.	Technology	18.	Misnomer
19.	Dilemma	19.	Lexicologist
20.	Synonym	20.	Nuisance

21.	Convenient	21. Computer
22.	Particular	22. Gladiator